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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

Application Number: 10/736,922

Filing Date: December 16, 2003

Appellant(s): WEI ET AL.

MAILED  
DEC 20 2007  
GROUP 1700

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Matthew Koziarz  
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 12 October appealing from the final Office action mailed 14 May 2007 and the pre-brief appeal decision of 30 August 2007.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The following are the related appeals, interferences, and judicial proceedings known to the examiner which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal: the under appeal of commonly owned co-pending application No. 10/736,921 as stated by the Appellant.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct. The changes are as follows:

o the rejection of claims 1-14, 17, 18 and 20-47 on the ground of nonstatutory obviousness double patenting as being unpatentable over claims 1-22, 24-34, 36 and 37 of copending Application No. 10/736,921 is missing in the appeal brief; and

o the rejections of claim 47 under the first and second paragraphs of 35 USC 112 are not presented for review on appeal because they have been withdrawn by the examiner in this examiner's answer.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

6,368,668	KOBAYASHI et al.	4-2002
2003/0021720	REISFELD et al.	1-2003

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

I. Claims 1-14, 17, 18, 34, 36, 45 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. (US 6,368,668 B1). Kobayashi's invention is directed to a method and apparatus for producing a photocatalytic material. Kobayashi discloses in the section "Background Of The Invention" that "photocatalysts have been drawn attention as materials that, upon light irradiation, cause adsorption of oxygen molecules on bacteria, mold, and organic compounds, such as offensive odor components, or desorption of oxygen molecules therefrom and accelerate the decomposition (oxidation) of the

organic compounds" and is useful for purification of harmful gases. Kobayashi discloses the photocatalytic material being formed by coating a photocatalyst composition of a photocatalyst metal oxide on a substrate (col. 3, lines 28-67). Kobayashi also discloses in paragraph crossing cols. 5 and 6 that the photocatalyst coating composition may further comprise a metal and/or a metal oxide to improve its photocatalytic activity, wherein the metal and/or metal oxide includes silver, platinum, gold and manganese oxide and is supported on the surface of the photocatalyst metal oxide; and in col. 10, lines 17-30 that a multi-layered coating of the photocatalyst composition may be formed on the substrate and the multi-layered coating may be formed from a plurality of different photocatalyst coating compositions. Since Kobayashi discloses a multi-layered photocatalytic coating from a plurality of different photocatalyst coating compositions formed on a substrate wherein the different photocatalyst coating compositions include all the recited coatings of a photocatalytic coating, and the use of the photocatalytic material in the purification of harmful gases, Kobayashi suggests the use of the photocatalytic material in a purification system. The difference between Kobayashi and the above claims is the provision of one of the photocatalytic coating on a first surface portion of the substrate and another photocatalytic coating on a second surface portion of the substrate adjacent the first surface portion. It would have been obvious matter of design choice action since Applicant has not disclosed that having the first layer on the first surface portion of the substrate and the second layer on the second surface portion of the substrate, that is

adjacent to the first surface portion, would enhance the process or is for any particular purpose and it appears that Kobayashi's multi-layered coating from a plurality of different photocatalyst coating compositions formed on a substrate would perform equally well in the enhancing of the purification of fluid. Further, since the independent claim 1 as now amended recites that the first layer of metal compound/titanium dioxide on the first surface portion and the second layer of metal compound/titanium dioxide on the second surface portion, the independent claim 1 recites that both layers can be of the same metal compound/titanium dioxide which is obvious by the teachings of Kobayashi.

As to the subject matter of each of claims 7-12, Kobayashi discloses the use of a UV light in Examples 7 and 8 in the determination of the photocatalytic activity of a photocatalytic coated substrate. To the intended use of the layered catalytic or purification system and the process limitation, it cannot be given any patentable weight in a claimed apparatus.

As to the subject matter of claim 14, since the coating layers are applied by spray, brush or sponge coating (col. 9, lines 48-55), the applied coating layers are inherently porous from such coating methods, especially when the substrate is porous such as woods.

II. Claims 7-12, 20, 33, 37, 38, 43 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi '668 in view of Reisfeld et al. (US 2003/0021720 A1). The difference between Kobayashi as applied above and the instant claims is the provision that

the system comprises the recited container, device and/or UV light source. Reisfeld teaches in a photocatalytic fluid purification system the recited limitations of a photocatalytic purifier having at least one catalytic coated substrate with which the circulated air comes into contact and at least one UV light source disposed near the substrate for illuminating thereof for eliminating odors, volatile organic compounds and bioaerosols in the circulated air (Figs. 1 and 4 and paragraph 20). Also, Reisfeld discloses in paragraph 26 that the activated catalyst oxidizes the contaminants in air into carbon dioxide and water. The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified Kobayashi's teachings as shown by Reisfeld because this would result in the application of Kobayashi's photocatalytic material to a photocatalytic fluid purification system for the eliminating of odors, volatile organic compounds and bioaerosols in the air.

III. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi '668 in view of Reisfeld '720. Kobayashi as applied above discloses in col. 3, lines 28-47, that the substrate is any substrates upon which a photocatalyst coating composition is coated. The difference between Kobayashi and the instant claims is the provision that the substrate is a honeycomb. Reisfeld teaches the limitation in paragraph 22 in a photocatalytic fluid purification system. The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the photocatalytic material of Kobayashi such that the substrate is a honeycomb

to be coated with the photocatalytic coating composition, as per the teachings of Reisfeld. One of ordinary skill in the art would have been motivated to make such modification because the selection of any of known equivalent substrates to be coated with the photocatalyst coating composition for the photocatalytic fluid purification would be within the level of ordinary skill in the art.

IV. Claims 21-32, 39-42 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reisfeld '720 in view of Kobayashi '668.. Reisfeld, a reference applied above, discloses in a photocatalytic fluid purification system the provision of two honeycomb photocatalytic filters (12,14,16) as shown in Fig. 1, where each of the filters is coated with any suitable photocatalyst coating (paragraph 24). Kobayashi as applied above teaches the provision of a multi-layered coating formed on a substrate from a plurality of photocatalyst compositions (col. 10, lines 17-30), wherein the photocatalyst coating composition may comprise a metal and/or a metal oxide to enhance the eliminating of odors, volatile organic compounds, bacteria and molds (paragraph crossing cols 5 and 6). The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified Reisfeld's teachings as shown by Kobayashi because this would result in enhancing the photocatalytic fluid purification.

As to the subject matter of claim 27, the sequence of the recited ordered substrates, since there is no unexpected results from the recited ordered substrates and since it is disclosed in paragraphs 34 and 60 of the specification that each of the

substrates is used to absorb each of specific contaminants and, when one specified contaminant is adsorbed on one of the substrates, each of the non-adsorbed contaminants is able to diffuse through the substrate and adsorbs on the next substrate, the combined references' substrates, Reisfeld's plurality of photocatalyst coated substrates with Kobayashi's substrate of a multi-layered coating from a plurality of different photocatalyst coating composition, though general and random is equivalent to the recited ordered substrates in the purification of the fluid for the adsorption of contaminants. Further, rearrangement of parts was held to have been obvious, *In re Japikse* 86 USPQ 70.

As to subject matter of the new depending claim 47, it would have been obvious matter of design choice action since Applicant has not disclosed that having the first layer on the first surface portion of the substrate and the second layer on the second surface portion of the substrate, that is adjacent to the first surface portion, would enhance the process or is for any particular purpose and it appears that Kobayashi's multilayered photocatalytic coating from a plurality of different photocatalyst coating compositions formed on a substrate would perform equally well in the enhancing of the purification of fluid. Further, since the claim recites that the first coating of metal /titanium dioxide on the first surface portion and the third layer of metal /titanium dioxide on the second surface portion, the claim recites that both layers can be of the same metal/titanium dioxide which is obvious by the teachings of Kobayashi.

V. Claims 1-14, 17, 18 and 20-47 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-22, 24-34, 36 and 37 of copending Application No. 10/736,921. Although the conflicting claims are not identical, they are not patentably distinct from each other because the above claims are broader than the patent claims, and comprise all the limitations of the patent claims except for the added limitation of one of the coatings on the first portion and the other on the second portion. The subject matter as a whole would have been obvious matter of design choice since Applicant has not disclosed that having the first layer on a portion of a substrate surface and the second layer on a different portion of the substrate surface adjacent to the first surface portion would enhance the process or is for any particular purpose and it appears that Kobayashi's multi layers would perform equally well in the enhancing of the purification of fluid.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

#### (10) Response to Argument

I. To the arguments under I and II of the appeal to the rejections of claim 47 under the first and second paragraphs of 35 USC 112, the arguments are moot in view of the withdrawal of the rejections by the examiner in the present examiner's answer.

II. Appellant argues under III that the rejection of claims 1-14, 17, 18, 34, 36, 45 and 46 under 35 USC 103(a) over Kobayashi does not establish prima facie obviousness

because of the design choice in the rejection being by itself not sufficient to support obviousness, and of the missing of a motivation from the rejection to modify the base reference (MPEP 2144.04(VI)(C)). The examiner finds this is unpersuasive. First, the cited MPEP to rearrangement of parts is not applied to the rejection of claims above. Second, since Applicant has not disclosed that having the recited limitation would enhance the process or is any particular purpose, it's the examiner's position to maintain the design choice in the obviousness rejection. And third, since the claim recites that the first layer of metal compound/titanium dioxide on the first surface portion and the second layer of metal compound/titanium dioxide on the second surface portion, the claim recites that both layers can be of the same metal compound/titanium dioxide which is read on by the teachings of Kobayashi.

III. Appellant argues under IV that the rejection of claim 35 is improper as being conclusory and no motivation. The rejection is not conclusory since Kobayashi discloses that the substrate is any substrates upon which a photocatalyst coating composition is coated to impart photocatalytic activity to the substrate, the photocatalytic activity being the eliminating of odors, volatile organic compounds, bacteria and mold and since Reisfeld teaches in a photocatalytic fluid purification the provision of a honeycomb coated with a photocatalyst material to the eliminating of odors, volatile organic compounds, bacteria and mold, both teachings relate to the use of a photocatalytic material to the eliminating of odors, volatile organic compounds, bacteria and mold. And the rejection has the

motivation, since both teachings relate to the use of a photocatalytic material to the eliminating of odors, volatile organic compounds, bacteria and mold, the selection of any of known equivalent substrates to be coated with the photocatalyst coating composition for the photocatalytic fluid purification would be within the level of ordinary skill in the art.

IV. Appellant argues under V(i) that the rejection of claims 20, 37 and 38 does not establish motivation as being merely a goal that would prompt one of ordinary skill to combine the references. It is not since Kobayashi discloses that the photocatalyst material is known for use in the purification of harmful gases and Reisfeld teaches the use of a photocatalytic material in a photocatalytic fluid purification, the motivation to combine both references is clearly obvious to one skilled in the art.

To the argument under V(ii) that the rejection of claims 7-12, 33, 43 and 44 is improper because of the design choice in the rejection being by itself not sufficient to support obviousness, and of the missing of a motivation from the rejection to modify the base reference (MPEP 2144.04(VI)(C)). The examiner finds this is unpersuasive. First, the cited MPEP to rearrangement of parts is not applied to the rejection of claims above. Second, there is no rejection of the above claims through the design choice. And third, the motivation is clearly stated by the examiner.

V. Appellant argues under VI(i) that the rejection of claims 21-32, 39-42 and 47 is improper as being not provided any motivation that would be known outside of Applicant's disclosure (the enhancing of the photocatalytic fluid purification) for selecting the

claimed photocatalytic compositions. It is not since the combined references teach a photocatalytic material and its use in the elimination of odors, volatile organic compounds and bacteria in gases and since Kobayashi teaches the provision of a multi-layered coating formed on a substrate from a plurality of photocatalyst compositions, wherein the photocatalyst coating composition may comprise a metal and/or a metal oxide to enhance the eliminating of odors, volatile organic compounds, bacteria and molds.

To the argument under VI(ii) that the rejection of claim 27 is improper as mere rearrangement without motivation for the particular claimed arrangement of layers is not sufficient to establish obviousness (MPEP 2144(VI)(C). The rejection is not improper since the examiner has provided the motivation. Since Reisfeld discloses that each additional filter layer increases the efficiency of the filter and since Kobayashi teaches a multi-layered coating formed on a substrate from a plurality of different photocatalyst coating composition and a photocatalyst composition with the addition of a metal and/or a metal oxide to enhance the eliminating of odors, volatile organic compounds, bacteria and mold, the motivation in the combined references is clearly the enhancing of the photocatalytic fluid purification by employing a plurality of photocatalytic coated substrate with different photocatalyst coating composition. Further, as asserted by the examiner to the sequence of the recited ordered substrates, since there is no unexpected results from the recited ordered substrates and since the specification discloses that each of the substrates is used to absorb each of specific contaminants and, when one specified

contaminant is adsorbed on one of the substrates, each of the non-adsorbed contaminants is able to diffuse through the substrate and adsorbs on the next substrate, the combined references' substrates, Reisfeld's plurality of photocatalyst coated substrates with Kobayashi's substrate of a multi-layered coating from a plurality of different photocatalyst coating composition, though general and random is equivalent to the recited ordered substrates in the purification of the fluid for the adsorption of contaminants.

To the argument under VI(iii) that the rejection of claims 47 does not establish *prima facie* obviousness because of the design choice in the rejection being by itself not sufficient to support obviousness, and of the missing of a motivation from the rejection to modify the base reference (MPEP 2144.04(VI)(C)). The examiner finds this is unpersuasive. First, the cited MPEP to rearrangement of parts is not applied to the rejection of claims above. Second, since Applicant has not disclosed that having the recited limitation would enhance the process or is any particular purpose, it's the examiner's position to maintain the design choice in the obviousness rejection. And third, since the claim recites that the first coating of metal /titanium dioxide on the first surface portion and the third layer of metal/titanium dioxide on the second surface portion, the claim recites that both layers can be of the same metal/titanium dioxide which is read on by the teachings of Kobayashi. The same is applied to the argument to the rejection of claim 47 that there is no further burden on appellant to establish that

the claimed arrangement is for any particularly purpose as the examiner suggest and to the argument that the rejection is based on improper grounds as being no motivation.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Kishor Mayekar



Conferees:



Nam Nguyen



Romulo Delmendo

Annual Conference